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Assessment of specific immunoglobulin isotype immunoblot reactivity of hydatid fluid antigen for the diagnosis of human hydatidosis

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Background: Human cystic echinococcosis (CE) caused by the larval stage of *Echinococcus granulosus*, a cestode parasite, is regarded as a significant public health problem with high morbidity and mortality rates in endemic areas worldwide. The diagnosis mainly depends upon imaging techniques coupled with immunodiagnostic procedures. The serum immunoglobulin isotype ELISA reactivity with *Echinococcus* antigens have been reported for diagnosis with variable sensitivity and specificity.

The present study was aimed to identify the specific immunoglobulin isotype immunoreactive antigens by western blotting for the diagnosis of human hydatidosis.

Methods: Hydatid fluid antigen was subjected to SDS-PAGE followed by immmunoblotting with serum samples collected from clinically suspected hydatidosis patients attending Sheri Kashmir Institute of Medical Sciences, Srinagar, Kashmir (an endemic area for hydatidosis, located in north India) and appropriate controls.

Results: IgG, IgM and IgE reactivity from CE patients revealed multiple immunoreactive bands ranging from 18-239 kDa (IgG), 18-110 kDa (IgM) and 24-134 kDa (IgE). For IgG, 108/120 (90%) samples were immunoreactive and the percentage occurrence of 52, 46, 57 and 24 kDa immunoreactive bands were 55%, 46%, 27% and 22% respectively. For IgM, 44/73 (60%) samples were immunoreactive and the percentage occurrence of 57 and 66 kDa were 73% and 52% respectively. For IgE, 45/73 (62%) samples were immunoreactive and the percentage occurrence of 57 and 66 kDa were 91% and 22% respectively.

With the use of other parasitic disease control samples, for IgG, 54-59 kDa fraction reacted with 7/8 (88%) samples. For IgM, 57 kDa fraction reacted with 4/8 (50%) and for IgE, 55-57 kDa reacted with 8/8 (100%) samples. For IgG and IgM, none of the 5 healthy control samples was reactive while for IgE 3/5 (60%) normal healthy serum samples were reactive.

Based on surgically proven patients, the sensitivity of IgG, IgM and IgE immunoreactivity with 24, 46 and 52 kDa fractions for IgG; 66 and 57 kDa for IgM and IgE (either alone or in combination) was 87%, 62% and 67% respectively.

Conclusion: It is suggested that IgG immunoblot reactivity with combination of more than two (24,46,52 kDa) hydatid fluid antigenic fractions excluding 57 kDa (being cross reactive) may serve, as a useful diagnostic marker.

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A randomized controlled study on the efficacy of Coconut milk-Vinegar-Calamansi concoction versus 5% permethrin for the treatment of head lice among the pediatric age group in an urban poor community in metro Manila

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Background: Head lice infestation is a worldwide phenomenon and highly prevalent in the Philippines. Expensive treatment and resistance to Permethrin contribute to this. Coconut milk was found to have cure rate of 90% in killing head lice. Vinegar and Calamansi were found to inhibit lice mobility. This study determined the efficacy and cost-effectiveness of Coconut milk-Vinegar-Calamansi concoction (CVC) as an alternative treatment for head lice.

Methods: This is a randomized double-blind clinical trial divided into three parts. Part I consisted of In Vitro and Patch Testing. In Vitro Test involved freshly collected live lice subjected to different concentrations of CVC. Patch Testing assessed adverse reaction from CVC. Part II determined the effective dosage and frequency of CVC application. In Part III, participants were randomly allocated to receive either Permethrin or CVC. Participants were followed up after 7 days to assess the efficacy of the solution. Reapplication was done if lice were detected on day 8. Efficacy of CVC and Permethrin were measured in terms of cure rate on day 14. Cure rate was defined as percentage of participants who had no live lice after two weeks. Adverse reactions were identified.

Results: In Vitro test (Part I) determined the effective concentration used in the study. Patch testing revealed no adverse reaction to CVC. Part II determined that the effective dosage of CVC was 60 ml applied for 30 minutes twice a week. In Part III, 32 participants, 3-14 years old with moderate to severe head lice infestation were randomly allocated to receive either Permethrin or CVC. Permethrin and CVC did not differ in their ability to kill the various stages of lice. At week 2, the cure rate of CVC was 99% and Permethrin was 100% (p-value = 0.07). No adverse reaction was noted. Two week treatment of CVC costs 72% less than Permethrin.

Conclusion: After 2 weeks of treatment, Permethrin and CVC had similar cure rate. Both were proven to be equally effective in killing eggs and adult lice. There was symptom relief without adverse reactions to CVC. CVC is more cost-effective than Permethrin.

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